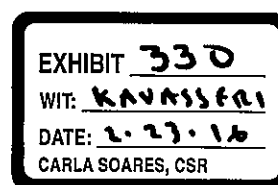


# **EXHIBIT F**

<b>Ram Kavasseri, Garry Horoupian</b>		
Draft v16, 2/8/06		
Session Number Presentation_ID	© 2005 Cisco Systems, Inc. All rights reserved.	Cisco Confidential 1



- **Background – how did we get here?**
- **What is Hot ICE?**
- **What must you do during Development?**
- **Hot ICE Tooling Demo**
- **What must you do during Test?**
- **Q&A**

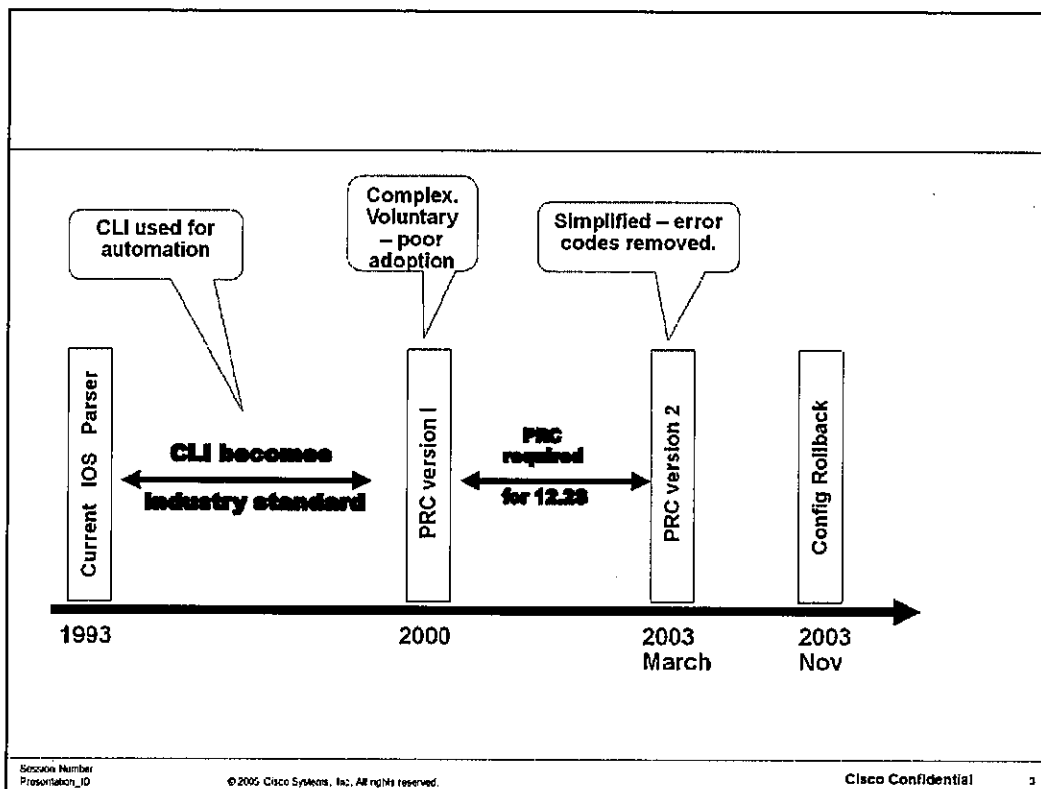
Session Number  
Presentation\_ID

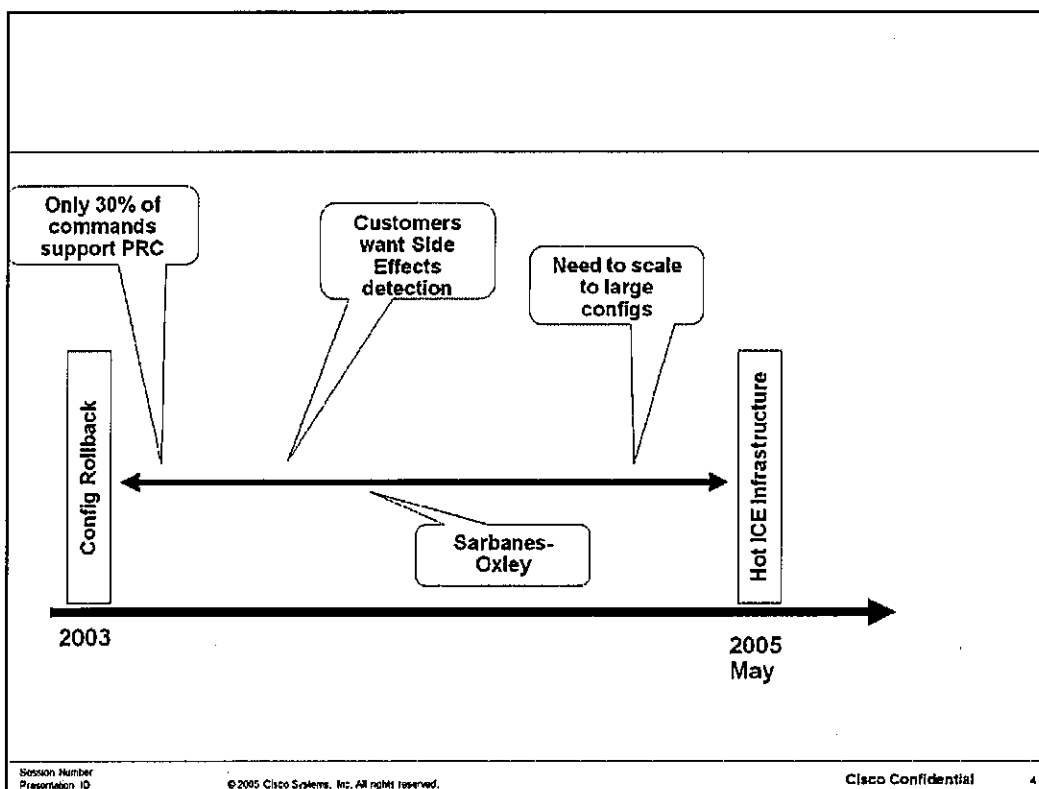
© 2005 Cisco Systems, Inc. All rights reserved.

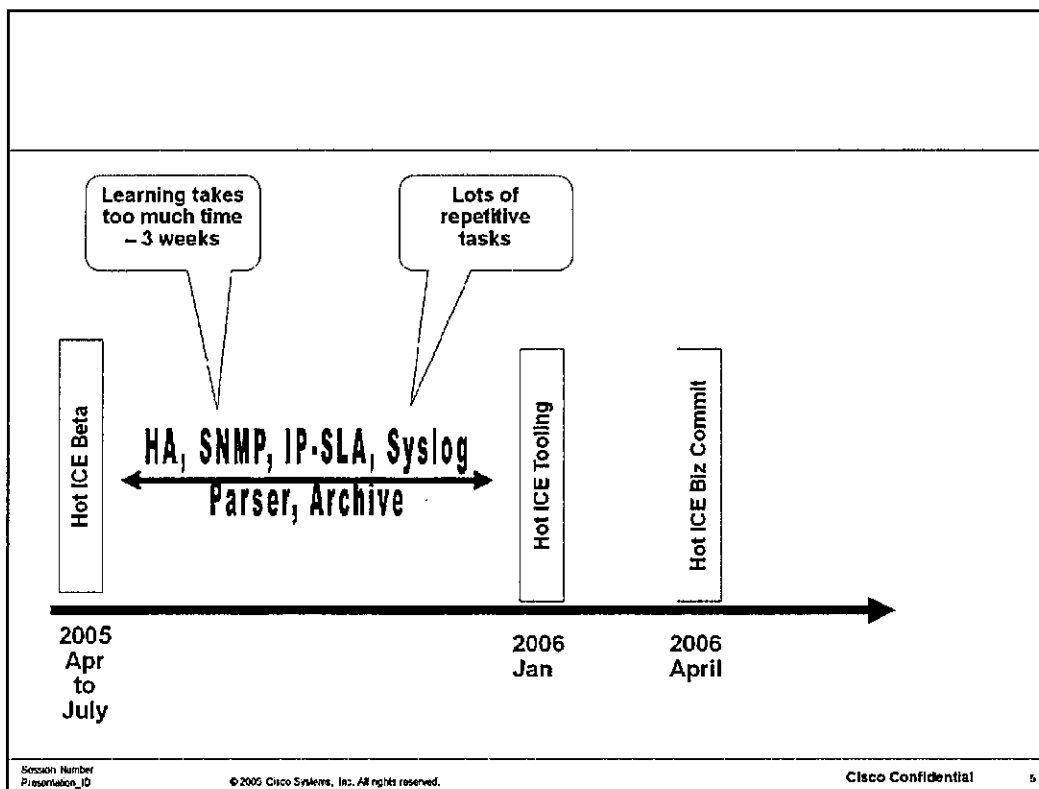
Cisco Confidential

2

- Intro – 5 mins
- Dev – 25 mins
- Test – 15 mins
- Q&A – 15 mins







- **Background – how did we get here?**
- **What is Hot ICE?**
- **What must you do during Development?**
- **Hot ICE Tooling Demo**
- **What must you do during Test?**
- **Q&A**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

6

- **Intro – 5 mins**
- **Dev – 25 mins**
- **Test – 15 mins**
- **Q&A – 15 mins**

- **Hot ICE is an IOS-wide Strategic program**
- **Upgrades IOS CLI technology**
- **Why?**
  - **Drive network operations costs down**
  - **Improve automated router control**
  - **Competitors like Juniper have raised the bar**
  - **Customers have scaled to 5MB configs**
  - **Customers asking for Rollback, Faster NVGEN**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

7



- **Improve IOS CLI Robustness**
- **Scale configs to > 10MB and thousands of interfaces**
- **Automate router control**

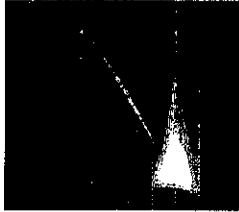
Session Number  
Presentation\_ID


© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

8

- **Rollback**  
Undo config changes without reload
- **Parser Return Code III**  
Success/failure status per config command
- **Config Change Notification**  
Report exact config change status



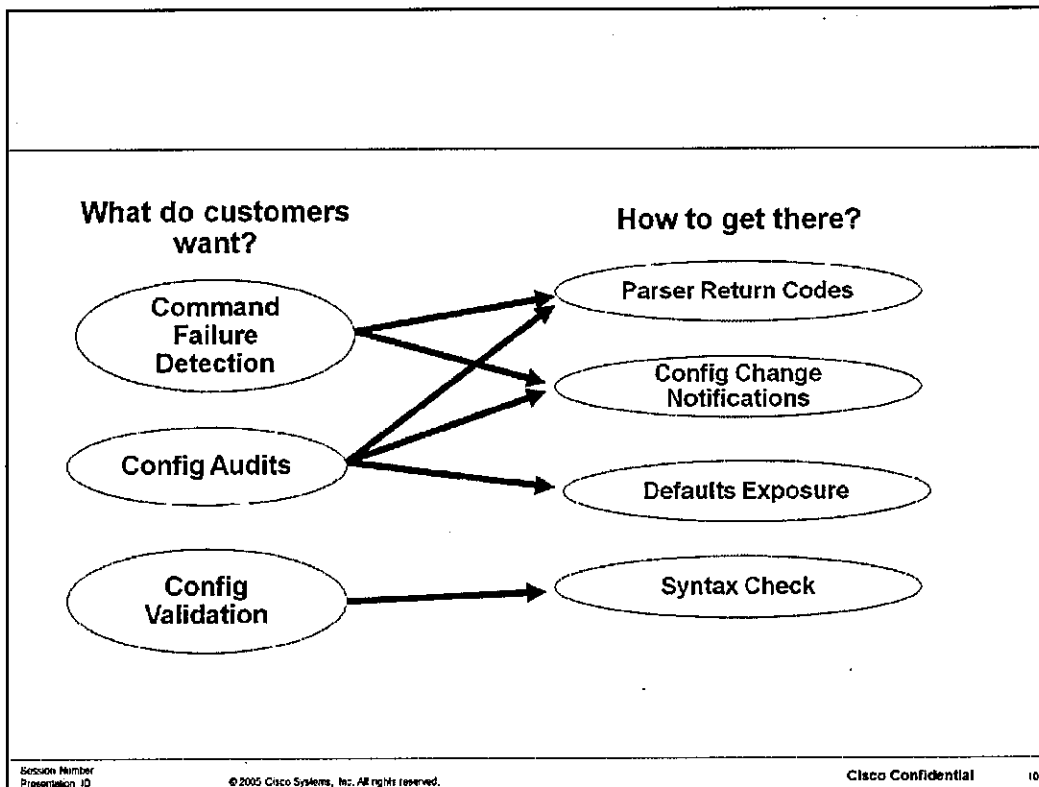


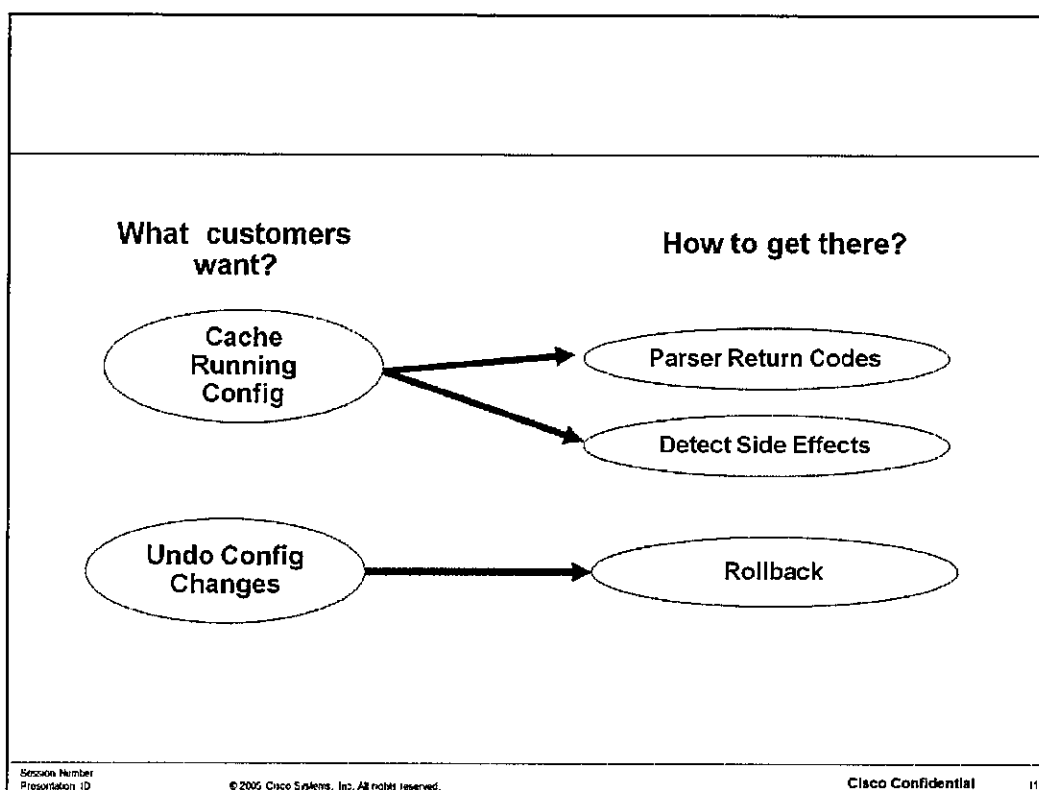
- **Defaults Exposure**  
Reveal default command settings
- **Config Side-Effects**  
Register commands that affect other commands
- **Syntax Check**

Session Number  
Presentation\_ID

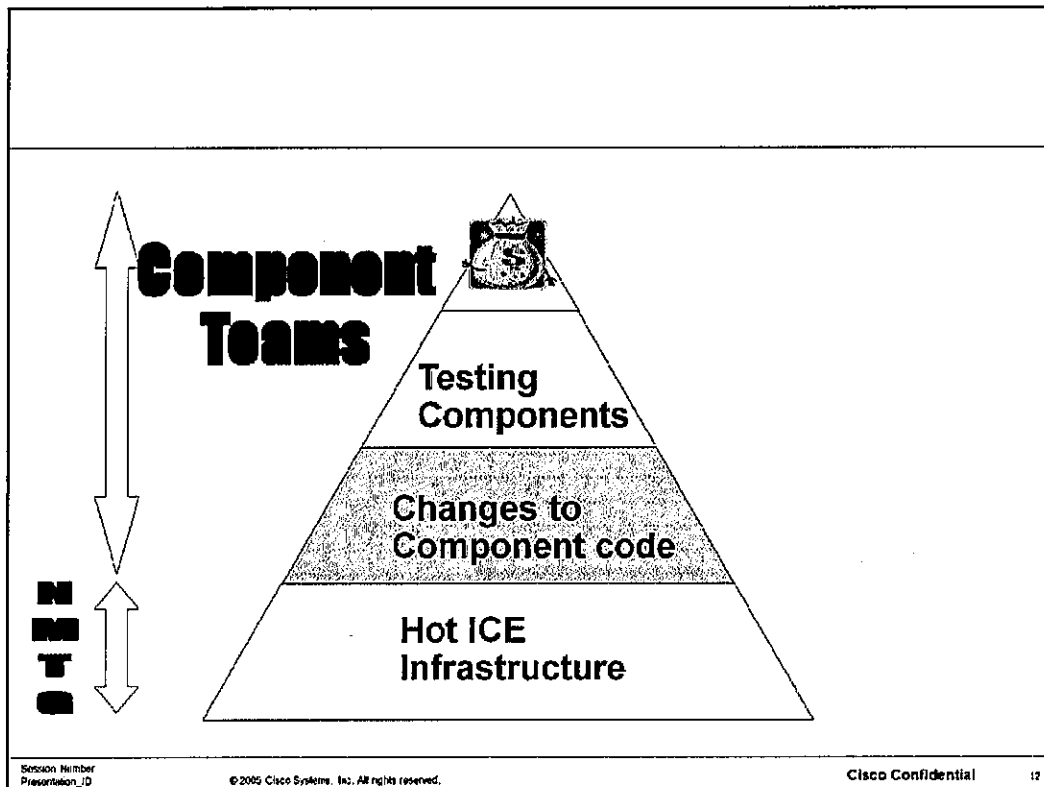
© 2005 Cisco Systems, Inc. All rights reserved.

**Test config changes without applying**





- Cache running-config with help of "Side Effect" Detection
- Verify if cache is "dirty" using PRCs
- Use rollback + diff to apply only changed config lines



- **Background – how did we get here?**
- **What is Hot ICE?**
- **What must you do during Development?**
- **Hot ICE Tooling Demo**
- **What must you do during Test?**
- **Q&A**

Session Number  
Presentation\_ID

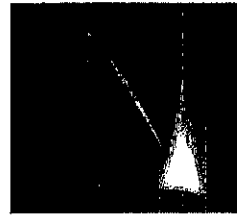
© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

13

- Intro – 5 mins
- Dev – 25 mins
- Test – 15 mins
- Q&A – 15 mins

- **Rollback**
- **Parser Return Code III**
- **Config Change Notification**



- **Defaults Exposure**
- **Config Side-Effects**
- **Syntax Check**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

14

- **Description**
  - Allow the user to roll back (or forward) to a previously saved configuration without requiring reload or expert intervention
- **Benefits**
  - Revert back to a known working configuration.
  - Reduce management application overhead
- **User Interface**
  - “configure replace <URL>”

Session Member  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

15



- 1. Is the “no form” nv-genned? E.g. “no keepalive”**
- 2. Are default values hidden in the running config?**
  - E.g. “keepalive 10”
  - If there are special “default values”, make sure the “default” keyword is supported, e.g. “default keepalive”
- 3. Does “undoing” a command introduce side-effects in the running-config?**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

16

```
7603-2#copy running-config disk0:runcfg-working
Destination filename [running-config]?
6462 bytes copied in 1.432 secs (4513 bytes/sec)
7603-2#
7603-2(config)#snmp-server ifindex persist
7603-2(config)#end
7603-2#
7603-2#show archive config differences disk0:runcfg-working
Contextual Config Diffs:
- snmp-server ifindex persist
7603-2#
7603-2#show running-config | include snmp-server ifindex
snmp-server ifindex persist
7603-2#
7603-2#
7603-2#config replace disk0:runcfg-working force
Total number of passes: 1
Rollback Done
7603-2#
7603-2#show running-config | include snmp-server ifindex
7603-2#
```

1. Save config

2. Add your command

3. Verify changes

4. Rollback changes

5. Verify rollback

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

17

- **Most IOS commands roll back properly**
- **Exception commands fall into several rollback categories:**

**Order-sensitive commands**

- “access-list”

**Special case negation**

- “snmp ifindex persist” is deleted by “snmp ifindex clear”

**Ignored commands**

- “no ipaddress”

Section Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

18

- **Special cases need to be registered at subsystem init time.**
- **Examples:**
  - Register Ignore commands using:  
`reg_invoke_add_ignore_command("version");`
  - Register Special Negation commands using:  
`reg_invoke_add_special_negation_command("snmp ifindex persist", "snmp ifindex clear");`

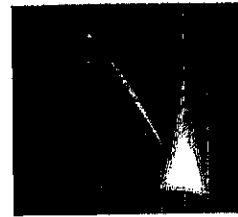
Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

19

- **Rollback**
- **Parser Return Code III**
- **Config Change Notification**



- **Defaults Exposure**
- **Config Side-Effects**
- **Syntax Check**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

20

- **Description**

- Components provide numeric return code
- Return code: “Success” or “Fail”
- Config status: “Change” or “No Change”

- **Benefits**

- Programmable failure detection for config commands
- Automate customer operations, internal test scripts
- Efficient NVGEN Caching (“Change” vs “No Change”)
- Reliable HA/ISSU Config Sync

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

21

- **Test behavior of existing and new commands**
- **Turn on PRC exposure**
  - “terminal prc { expose | hide }”
- **Check for the following:**
  1. Are PRC values exposed for your command?
  2. re-applying command MUST result in “No Change”
  3. Are correct error codes set for command failures?

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

22

```

RTR1#terminal pro expose
!PRC[sucesss, change-type=PRC_CONFIG_CHANGE_NO_NVGEN, change-
mode=PRC_IMMEDIATE, ha-sync-enable=false][command=terminal pro
expose ]
RTR1#config terminal
Enter configuration commands, one per line. End with CNTL/Z.
!PRC[invalid][command=conf t]
RTR1(config)#
RTR1(config)#snmp-server host 1.2.3.4 version 3 auth RamK
!PRC[sucesss, change-type=PRC_CONFIG_CHANGE, change-
mode=PRC_IMMEDIATE, ha-sync-enable=true][command=snmp-server
host 1.2.3.4 version 3 auth RamK]
RTR1(config)#
RTR1(config)#
RTR1(config)#snmp-server host 1.2.3.4 vrf NOT_THERE version 3
auth RamK
% VRF name NOT_THERE does not exist
!PRC[failure, error-code=3005, failure-
type=PRC_FAILURE_PERMANENT, ha-sync-enable=false][command=snmp-
server host 1.2.3.4 vrf NOT_THERE version 3 auth RamK]

```

1. Enable PRC printing
2. Enter config mode
3. Add command
4. Check for PRC success
5. Check for PRC failure

Section Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential 23



- **Coding step 1: grab the prc block from the csb**

```
prc_t prc = prc_get_block_ptr(csb);
```

- **Coding step 2: Set PRC Success codes**

–For success WITHOUT change:

```
prc_success(prc, PRC_CONFIG_NO_CHANGE,  
            PRC_IMMEDIATE);
```

–For success WITH change to the running-config:

```
prc_success(prc, PRC_CONFIG_CHANGE, PRC_IMMEDIATE);
```

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

24

- **Coding step 3: Set PRC failure codes**

- Use the “prc\_failure()” API

- For a memory failure error, use:

- `prc_failure (prc, PRC_NO_MEMORY,  
PRC_FAILURE_RETRY);`

Session Number:  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

25

- **Coding step 4: Use the new EOLS\_COMMAND macro**

- EOLS changes to EOLS\_COMMAND

- Last argument indicates if PRC is supported or not

- EOLS\_COMMAND (conf\_snmp\_tftp\_eol,  
snmp\_ip\_command, parser\_syntax\_check\_handler,  
SNMP\_TFTP\_LIST, EOL\_PRC\_SUPPORTED);

- Macro will leave a “signature” in the sun file

- “signature” will help us track PRC compliance for TL9K, Sarbanes-Oxley


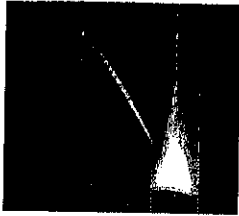
Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

26

- **Rollback**
- **Parser Return Code III**
- **Config Change Notification**



- **Defaults Exposure**
- **Config Side-Effects**
- **Syntax Check**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential 27

- **Customers want EXACT CHANGE notification**

- »What changed?
- »Who changed it?
- »When?
- »What's the PRC value?
- »What does the new config look like?

- **Benefits**

- Security audits
- Efficient change management
- Sarbanes-Oxley compliance

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

28

- **Coding Step 1: Examine existing command behavior**
  - Turn on CCN debugging
  - Many commands will generate correct, minimal nvgen output

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

29

- **Coding Step 2: Classifying exceptions**
  1. **Some commands generate ZERO output**
    - Add appropriate NVGEN code to action function
  2. **Some commands re-generate ENTIRE submode**
    - Break up nvgen logic among submode commands
    - Makes CLI more modular
    - Not always possible due to “age of code”, complexity, authors of code now working at competitors
  3. **Some commands generate VOLUMINOUS configs**
    - Work with Hot ICE team to “creatively” report changes

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

30

- **Coding step 3: Use the new EOLS\_COMMAND macro**

- EOLS changes to EOLS\_COMMAND

- Last argument indicates if CCN is supported or not

- EOLS\_COMMAND (conf\_snmp\_tftp\_eol,  
snmp\_ip\_command, parser\_syntax\_check\_handler,  
SNMP\_TFTP\_LIST, EOL\_NVGEN\_SUPPORTED |  
EOL\_PRC\_SUPPORTED);

- Macro will leave a “signature” in the sun file

- “signature” will help us track CCN compliance for TL9K,  
Sarbanes-Oxley

Session Number  
Presentation\_ID


© 2005 Cisco Systems, Inc. All rights reserved.


Cisco Confidential

31



- **Rollback**
- **Parser Return Code III**
- **Config Change Notification**





- **Defaults Exposure**
- **Config Side-Effects**
- **Syntax Check**

Session Number  
Presentation\_ID© 2005 Cisco Systems, Inc. All rights reserved.Cisco Confidential 32

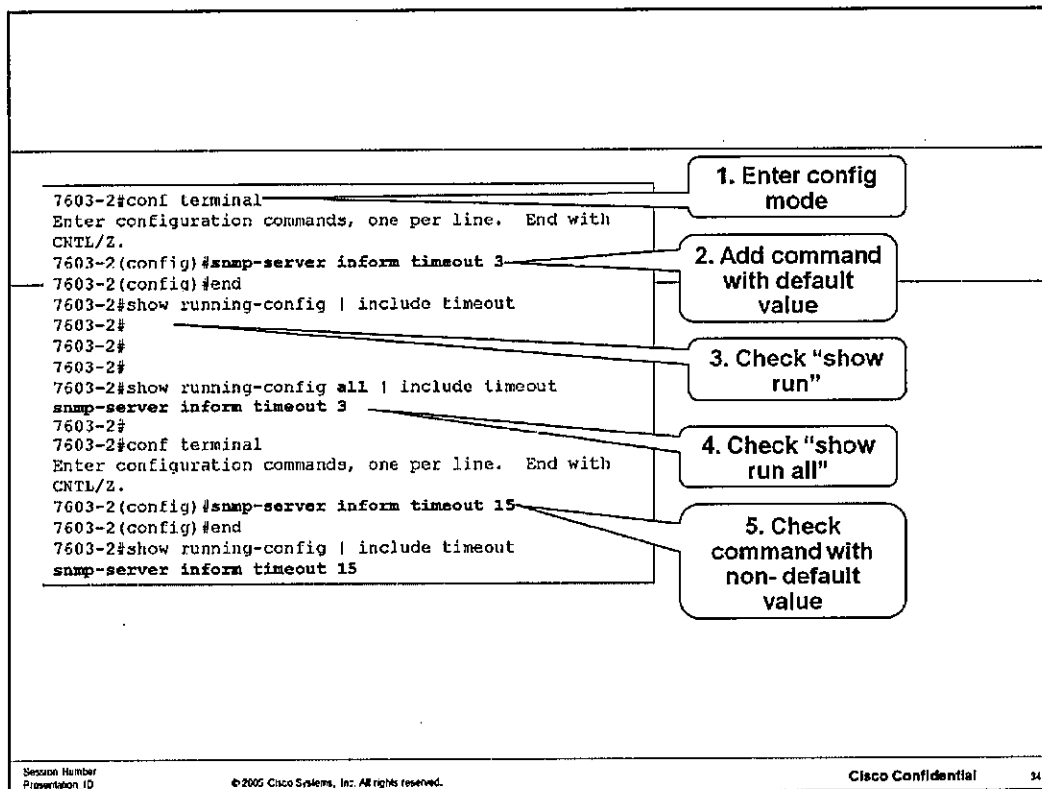
- **IOS config has been “smart” about minimizing config data**
  - Default settings are NOT printed
- **Customers want this to change**
  - default settings have changed in the past
  - Default changes break image upgrades
  - Potential security holes
  - Sarbanes-Oxley requirement

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

33



- A set of new APIs will be provided to output the default forms of configuration commands. The show running-config command with option 'all' will expose the command when in default form. The copy command is also enhanced to enable copying of verbose configuration with the "all" option.

- **Step 1: Examine nvgen code**

- **Typical default logic looks like:**

```
if (max_entries != PARSE_LOG_ENTRIES){  
    nv_write(TRUE, " %s %u", csb->nv_command, max_entries);  
}
```

Check for  
default value

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

35

- Step 2: Change nvgen code

- New default logic looks like:

```
if (max_entries != PARSE_LOG_ENTRIES) {  
    nv_write(TRUE, " %s %u", csb->nv_command, max_entries);  
}  
else {  
    NV_WRITE_DEFAULT(TRUE, " %s %u", csb->nv_command,  
        PARSE_LOG_ENTRIES);  
}
```

Original check for  
default value

"show run" path

Cisco Style violation –  
DO NOT do this

New code to print  
default values

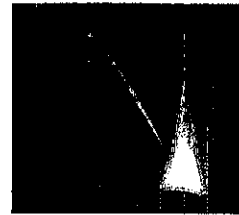
Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

36

- Rollback
- Parser Return Code III
- Config Change Notification



- Defaults Exposure
- Config Side-Effects
- Syntax Check

Session Number:  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

37

- **Description**

**Adding/deleting some IOS commands introduces OTHER config changes**

- **Effect**

- Breaks customer audits

- Who changed the side-effect commands?

- Is this a security hole?

- Breaks nvgen caching

Source Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

38

- **Step 1: Understand cause-effect relationship**

- One command causes the side-effect
  - The causative command's action function is called  
Command Action Function (CAF)
- There are one or more “effected” commands
- “Effected” commands need to be re-nvgennd
  - Effected command's NVGEN function is called  
NVGEN Action Function (NAF)

Section Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

39



- **Step 2: Tell the parser about your CAF node**

- Declare an enum to identify your CAF node in parser/parser\_side\_effects\_public.h

- ```
typedef enum {  
    PARSER_SIDE_EFFECTS_IPROUTING  
} caf_node_value;
```

- Register your CAF node using parser\_add\_caf\_chain(...)

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

40

- **Step 3: Add all the NAF functions into a static list**

```
#include "../parser/parser_side_effects_public.h"

app_naf_element ip_routing_naf_list[] = {
    { &pname(ci_ip2_routecache_eol), "ip route-cache",
      "interface", 0, "interface", "config", 0},
    { NULL }
};
```

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

41

- **Step 4: Map from “cause” to “effect”**

- Map CAF to NAF using “parser\_add\_naf\_list\_element(...)”

- Changes made in subsystem init code

```
parser_add_naf_list_element(PARSER_SIDE_EFFECTS_IPROUTING,  
ip_routing_naf_list);
```

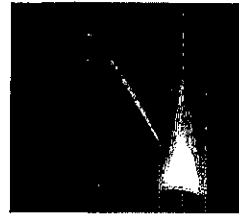
Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

42

- Rollback
- Parser Return Code III
- Config Change Notification



- Defaults Exposure
- Config Side-Effects
- Syntax Check

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

43

- **Description**
  - Customers want “Two Phased Commit” for config changes
    - Phase 1: Check syntax. DO NOT apply.
    - Phase 2: Apply at appropriate time.
- **Syntax Check**
  - Checks commands without applying them
  - New syntax check mode that “looks like” config mode
  - Customers can “simulate” config actions without effecting changes

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

44

- **For most CLI commands, no new code needed**
- **Changes needed for submodes**
- **Submode needs to:**
  1. **Init data structures for submode parse chain**
  2. **MUST NOT make config changes**
  3. **Push submode parse chain onto parser stack**
  4. **Cleanup after exit from submode**
  5. **Use new EOLS\_SUBMODE macro**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

45

- **Some commands need instrumentation**
  - Any command that uses ASSERT, TEST, IFELSE, FUNC
  - Use the new EOLS\_COMMAND macro
    - Provide a syntax check function

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

46

- **We're retro-fitting code that's 10+years old**
- **Some submodes create config changes during syntax check**
  - e.g. interface Loopback0
- **Do your best to avoid config changes**
- **But if you can't...**
  1. Undo changes after submode exit
  2. Document these exceptions
  3. Ask customers to "lock" config before syntax check

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

47



- **Background – how did we get here?**
- **What is Hot ICE?**
- **What must you do during Development?**
- **Hot ICE Tooling Demo**
- **What must you do during Test?**
- **Q&A**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

48

- **Intro – 5 mins**
- **Dev – 25 mins**
- **Test – 15 mins**
- **Q&A – 15 mins**

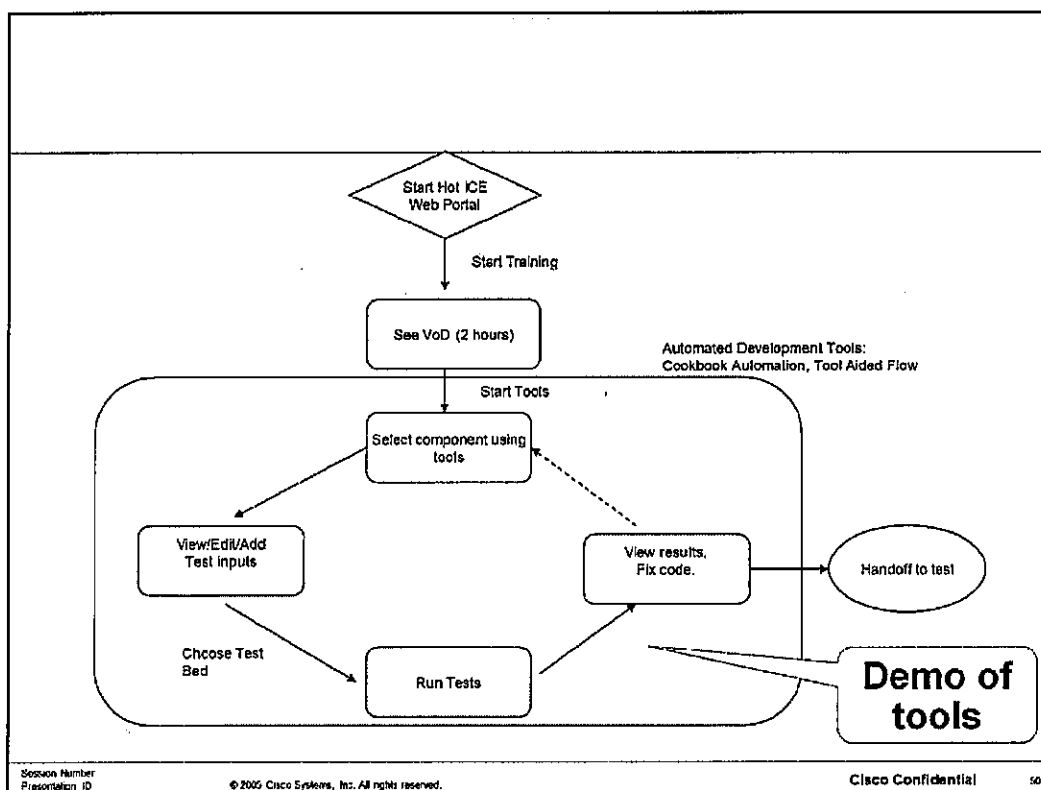
- **Hot ICE – lots of simple parts**
- **When all parts are combined, you have**
  - Lots to check
  - Some code changes
  - Lots of repetitive work
- **Good target for automation**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

49



- When we first did the Hot ICE Pilot, it took the MPLS-VPN and HA teams about 2.5 weeks to read all our func specs.
- We then provided a cookbook, which cut down the startup time to 1 week.
- We're hoping to cut this further to 2 days by providing a short video that gets the developer started on Hot ICE and the tooling.
- This way, the developer's workflow to start the Hot ICE work become:
  1. click on the component,
  2. see the commands under that component (we will preseed as many of these commands as possible into the tools so the developers can get going immediately),
  3. add a few test inputs (we're trying to add some of these as well – but at this time, it's a stretch goal for Tooling Phase 1)
  4. Select a test bed
  5. Run the tests
  6. The results will point the developer to the appropriate sections of the cookbook related to any errors that are found.
  7. The developer needs to fix the code and repeat steps 1 through 6 until all errors are resolved.

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

51

- **Background – how did we get here?**
- **What is Hot ICE?**
- **What must you do during Development?**
- **Hot ICE Tooling Demo**
- **What must you do during Test?**
- **Q&A**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

52

- Intro – 5 mins
- Dev – 25 mins
- Test – 15 mins
- Q&A – 15 mins

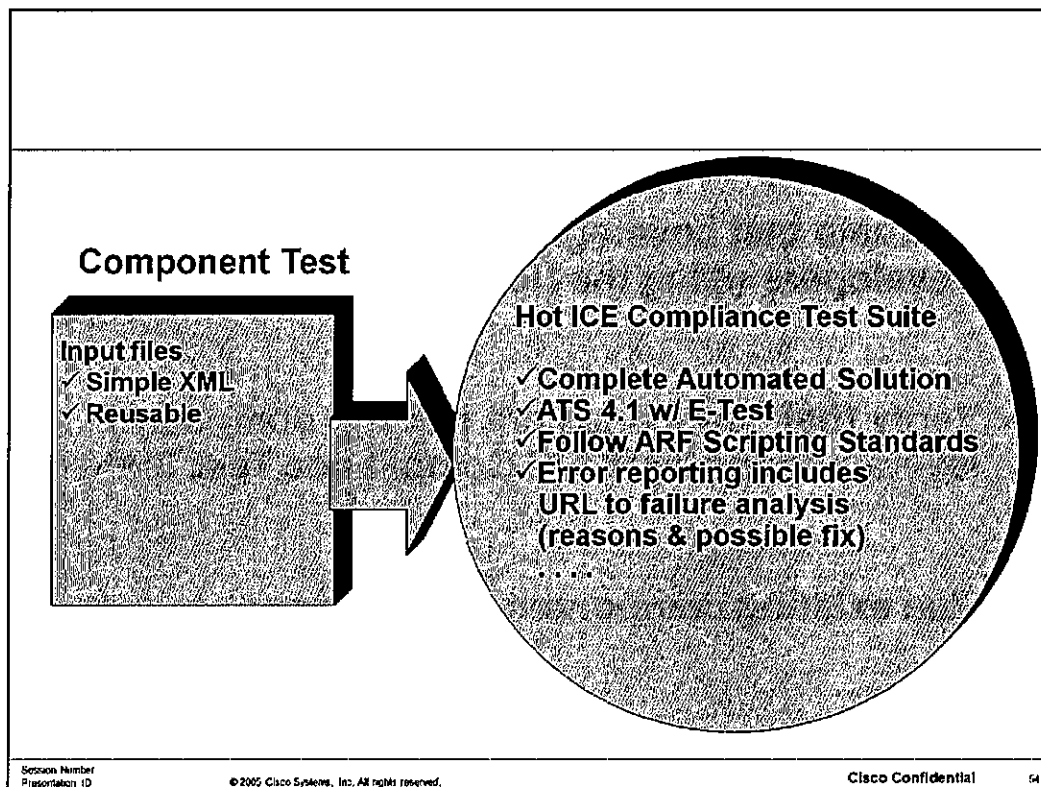
- ✓ Evaluate test coverage already completed by Developers using the Hot ICE Web Portal
- ✓ Verify that commands are Hot ICE compliant, leveraging the “Hot ICE Compliance Test Suite”
- ✓ Run existing component regressions

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

53



- ✓ Provide coverage for all 6 Hot ICE features
- ✓ Version checking
- ✓ Reusable library procedures
- ✓ Traceback check
- ✓ Results:
  - Supports TIMS importing
  - Option to provide one result/script or one result/testcase
  - Option for XML Output
- ✓ Effectiveness: Average 78% CFLOW Code Coverage

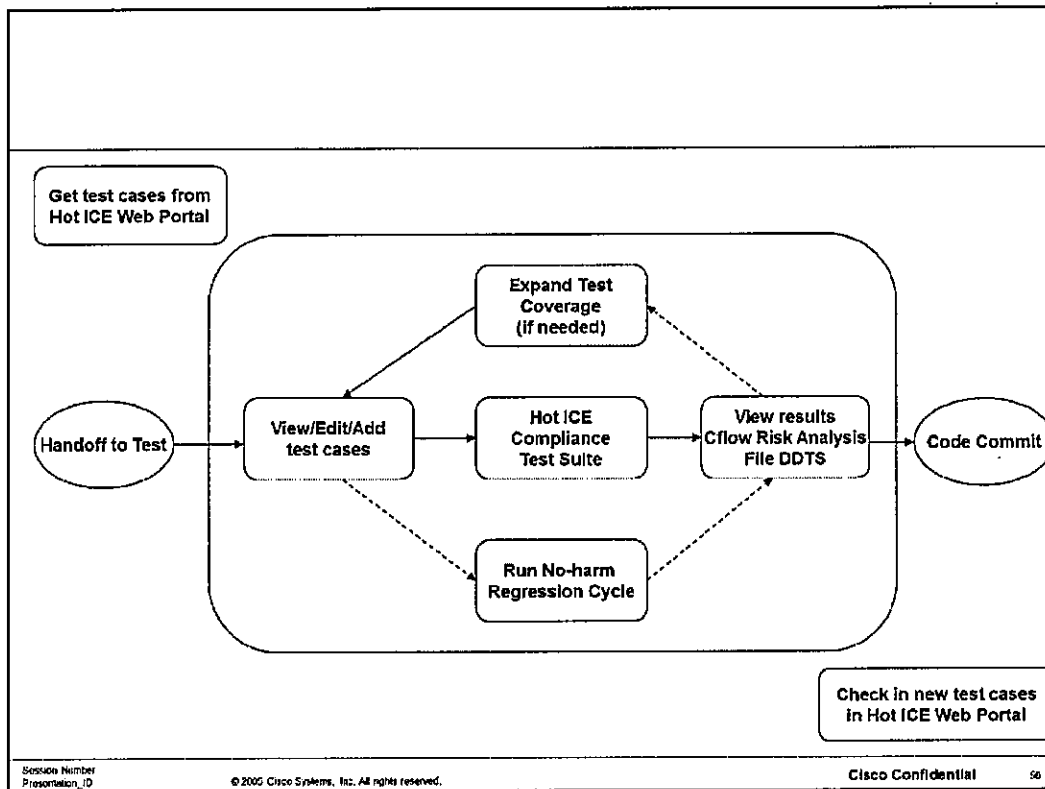
Section Number  
Presentation\_ID

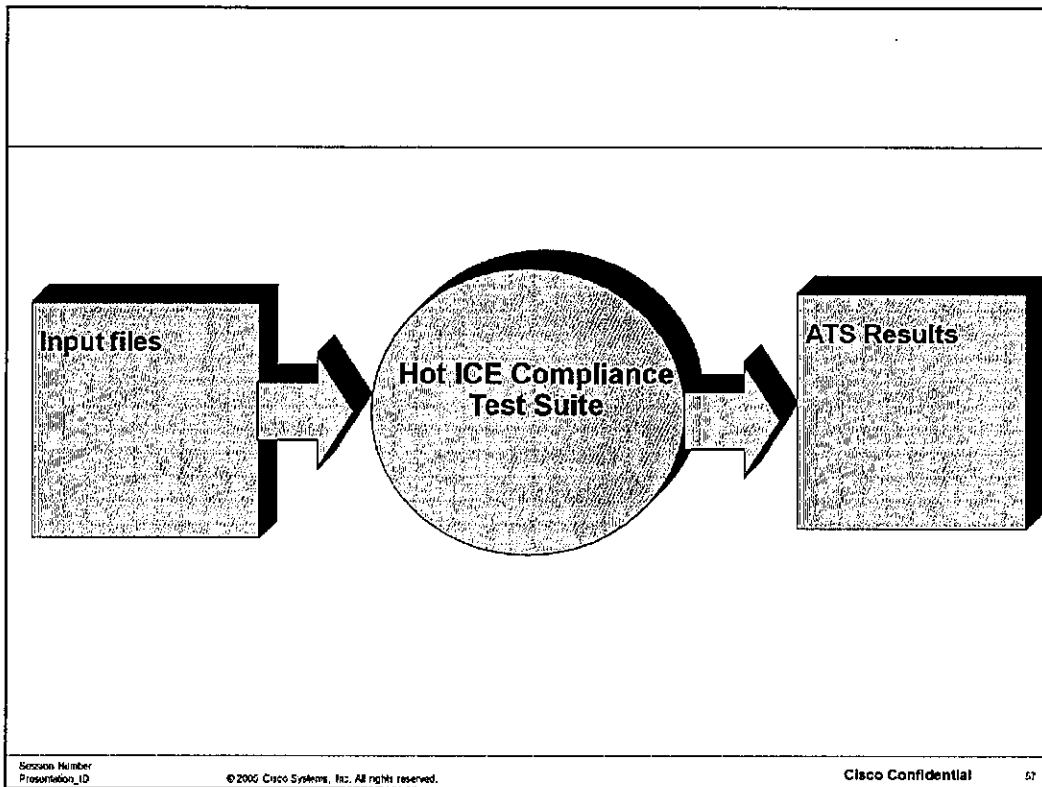
© 2005 Cisco Systems, Inc. All rights reserved.

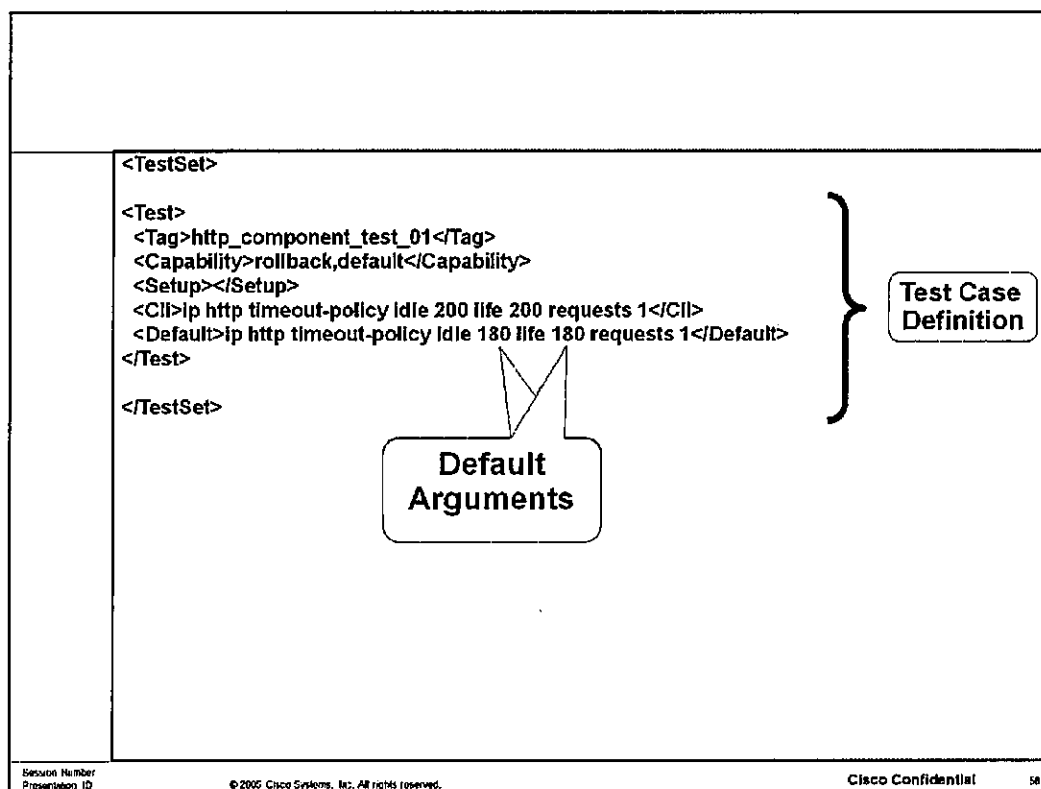
Cisco Confidential

55

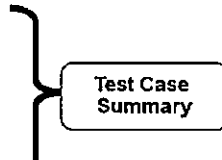
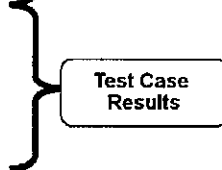








- Garry and Chris to provide Feedback. (Updated by Chris, any other thoughts/changes?)

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <pre> Test name   : DEFAULT.tetest: ip http timeout-policy idle 180 life 180 requests Script name : .../test/DEFAULT.tetest Test id     : ip http timeout-policy idle 100 life 100 requests 1::DE Test version : \$Revision: 1.1 \$ Description : DEFAULT.tetest Compliance Test for Default Cmd "ip http timeout-policy idle 180 life 180 requests 1" Test Diags  : ! ##### # TEST(tag)      = http_component_test_01 # TEST(capability) = rollback,default # TEST(default)  = ip http timeout-policy idle 180 life 180 requests 1 # TEST(cli)      = ip http timeout-policy idle 200 life 200 requests 1 # TEST(setup)    = NULL # ----- CHECK 1: PASS. Default command is correctly visible ONLY in the show running-config all output. CHECK 2: PASS. After configuring the NON-default command, the command is correctly visible in the show running-config output. TRACEBACK CHECK. None Found  S/W version  : 12.2(20051207:085513) </pre> | <div style="display: flex; flex-direction: column; align-items: center;"> <div style="margin-bottom: 20px;">  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; background-color: white;">Test Case<br/>Summary</div> </div> <div>  <div style="border: 1px solid black; border-radius: 10px; padding: 5px; background-color: white;">Test Case<br/>Results</div> </div> </div> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Session Number  
Presentation\_ID
© 2005 Cisco Systems, Inc. All rights reserved.
Cisco Confidential 59

```
<Test>
  <Tag>snmp_community_1_neg_2</Tag>
  <Capability>prc</Capability>
  <Setup></Setup>
  <Submode></Submode>
  <Cli>snmp-server community "my cisco" RO</Cli>
  <Rtr_Mode>config</Rtr_Mode>
  <Status>failure</Status>
  <Failure_Type>PRC_FAILURE_PERMANENT</Failure_Type>
  <Error_Code>3005</Error_Code>
  <HA_Sync>false</HA_Sync>
</Test>
```

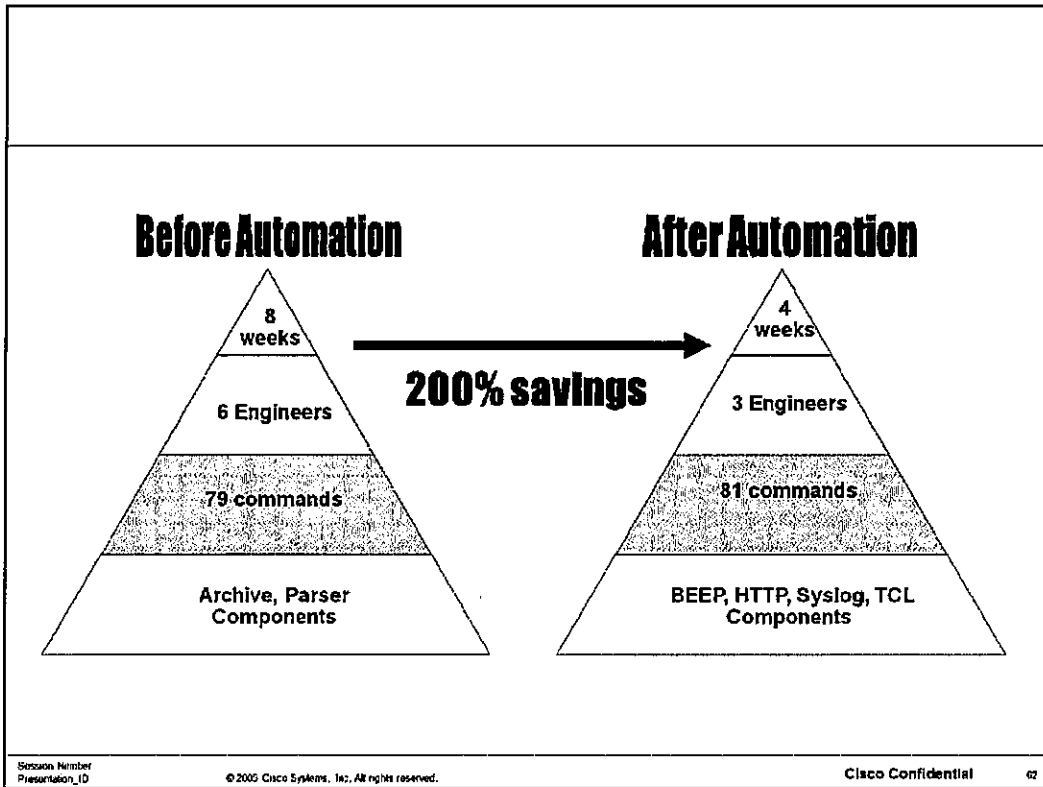
Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

60

<p>Test Diags :!</p> <pre>##### # TEST(4) "community_1_neg_3" # ----- # TEST(cli) = snmp-server community "my cisco" RO # TEST(rtr_mode) = config # TEST(status) = failure # TEST(ha_sync) = false # TEST(mode) = 3005 # TEST(type) = PRC_FAILURE_PERMANENT # -----  VALID COMMAND PRC VALUES: 7206-2(config)# snmp-server community "my cisco" RO % whitespace in community string not allowed !PRC(failure, error-code=3005, failure-type=PRC_FAILURE_PERMANENT, ha-sync-enable=false)[command=snmp-server community "my cisco" RO]  Expected State: Matched expected &lt; failure &gt; Error Code :    Matched expected &lt; 3005 &gt; Failure Type :  Matched expected &lt; PRC_FAILURE_PERMANENT &gt; HA Sync :      Matched expected &lt; false &gt; Matched all PRC fields RESULT = "PASS"</pre>		<p><b>Test Case Summary</b></p> <p><b>Test Case Results</b></p>
<p>Session Number Presentation_ID</p>	<p>© 2005 Cisco Systems, Inc. All rights reserved.</p>	<p>Cisco Confidential 61</p>



**Hot ICE Home Page:**  
**<http://hotice.cisco.com>**

Section Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

63



- **Background – how did we get here?**
- **What is Hot ICE?**
- **What must you do during Development?**
- **Hot ICE Tooling Demo**
- **What must you do during Test?**
- **Q&A**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

64

- Intro – 5 mins
- Dev – 25 mins
- Test – 15 mins
- Q&A – 15 mins

- **Will there be complete CLI re-writes? No.**
- **Will there be exception commands that need special handling? Yes.**
- **Has “Hot ICE” been deployed anywhere? Yes. BEEP, Syslog, SNMP...**
- **How long will it take to roll out Hot ICE across ALL IOS commands? ~2 years.**
- **When can I start? April 10<sup>th</sup> 2006.**

Session Number  
Presentation\_ID

© 2005 Cisco Systems, Inc. All rights reserved.

Cisco Confidential

65



Case No. 14-cv-05344-BLF

Case Title Cisco Systems v. Arista Networks

Exhibit No. 5134

Date Entered \_\_\_\_\_

By: \_\_\_\_\_, Deputy Clerk

Richard W. Wieking, Clerk